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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/725,980

12/01/2003

Radoslav Danilak

NVID-P000817

4928

45504

7590

04/22/2008

NVIDIA C/O MURABITO, HAO & BARNES LLP

TWO NORTH MARKET STREET

THIRD FLOOR

SAN JOSE, CA 95113

EXAMINER

LEE, CHUN KUAN

ART UNIT

PAPER NUMBER

2181

MAIL DATE

DELIVERY MODE

04/22/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/725,980

Applicant(s)

DANILAK, RADOSLAV

Examiner

Chun-Kuan Lee

Art Unit

2181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-22 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 01 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/5508)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

RESPONSE TO ARGUMENTS

1. Applicant's arguments presented during the interview on February 13, 2008 regarding the utilization of applicant's Figure 1 as prior art have been fully considered and are persuasive. Therefore, the rejections associated with the utilization of Figure 1 as prior art has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Maleck (US Patent 6,681,281). Objection to Figure 1 is withdrawn. Rejection of claims 1-22 under 35 U.S.C. 112 first paragraph are withdrawn. Currently, claims 1-22 are pending for examination.
2. In response to applicant's arguments (on page 10, 2nd paragraph to page 11, 1st paragraph) regarding the rejection of independent claim 14 rejected under 35 U.S.C. 103(a) that AAPA fail to teach/suggest preparing disk transaction information by packaging a plurality of data structure comprising the disk truncation, in the claimed fashion, because AAPA discloses the preparation of the disk transaction before issuing the start up command; applicant's arguments have fully been considered, but are not found to be persuasive.

The examiner respectfully disagree, and please note that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The

examiner is only relying on AAPA for the teaching/suggesting of preparing the disk transaction information; the examiner is not relying on when the start up command is issued corresponding to the preparation of disk transaction information, as such teaching is disclosed by Wilcox; wherein Wilcox teaches the transferring of a command to the disk controller which causes a start up of the disk drive coupled to the disk controller (Fig. 7, ref. 202; col. 3, ll. 40-62 and col. 5, ll. 7-41), after the transferring of the command disk transaction information is prepared (co. 11, l. 38 to col. 12, l. 57).

3. In response to applicant's arguments (on page 11, 2nd paragraph) regarding the rejection of independent claim 14 rejected under 35 U.S.C. 103(a) that AAPA teaches away from the claimed limitation because of the excessive amount of latency and over head; applicant's arguments have fully been considered, but are not found to be persuasive.

The examiner respectfully disagrees, because AAPA does not appear to be suggesting that the resulting combination with Wilcox would not function technologically; additionally, AAPA's teaching of excessive amount of latency would motivate one skilled in the art to combine with Wilcox, because by combining with Wilcox latency can be reduced (Wilcox, col. 2, ll. 19-23 and col. 2, ll. 51-53).

4. In response to applicant's arguments (on page 12, 3rd paragraph to page 13, 1st paragraph) regard the rejection of independent claim 14 rejected under 35 U.S.C. 103(a) that Wilcox fail to teach/suggest that subsequent to transferring the command

causing the start up and before the completion of the startup, prepare disk transaction information; applicant's arguments have fully been considered, but are not found to be persuasive.

The examiner respectfully disagrees, Wilcox does teaches/suggests subsequent to transferring the command causing the start up (e.g. START signal asserted) and before the completion of the startup, prepare disk transaction information (e.g. transferring a sector or cluster of data into memory 56 of Fig. 1) (Wilcox, Fig. 7 and col. 11, l. 38 to col. 12, l. 57), wherein the preparation of the disk transaction information would start before the completion of the startup, because the preparation of the data to be transferred (e.g. disk transaction information) (Wilcox, Fig. 7, ref. 204) commence subsequently after the assertion of the START signal, rather than before the assertion of the START signal.

5. In response to applicant's arguments (on page 13, 2nd paragraph) regard the rejection of independent claim 14 rejected under 35 U.S.C. 103(a) that Wilcox does not teach/suggest a plurality of bypass registers; applicant arguments have fully been considered, but are not found to be persuasive.

The examiner respectfully disagrees, as Wilcox does teach/suggest the storing of transferring data (e.g. disk transaction information) in an internal memory (e.g. bypass register) (Fig. 1, ref. 56) of the disk controller (Fig. 1, ref. 50) before being transferred to the disk drive (col. 11, l. 38 to col. 12, l. 57).

I. REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Maleck (US Patent 6,681,281) and Wilcox (US Patent 6,185,634).

7. As per claims 1, 9 and 14, AAPA teaches a computer system and method comprising:

preparing disk transaction information by packaging a plurality of PRD (physical region descriptor) data structures and a plurality of CPB (command parameter block) data structures comprising the disk transaction (Specification, page 4, ll. 9-22);

transferring the disk transaction information to the disk controller (Specification, page 4, ll. 9-24); and

implementing a disk I/O (e.g. disk transaction), wherein the disk controller processes the disk transaction information to control the disk drive (Specification, page 4, ll. 9-24).

AAPA does not teach the computer system and method for implementing a bypass method for efficient disk I/O (input output), comprising:

a processor; a system memory coupled to the processor; a bridge component coupled to the processor; and the disk controller coupled to the bridge component; upon receiving a request for a disk I/O from ...;
subsequent to transferring the command causing the startup ...; and
the disk controller including a plurality of bypass registers

Maleck teaches a computer system and method comprising:

a processor (Fig. 1, ref. 100);
a system memory (memory and cache coupled to the north bridge 110 of Fig. 1) coupled to the processor;
a bridge component (Fig. 1, ref. 110, 120) coupled to the processor; and
a disk controller coupled to the bridge component (Fig. 1, ref. 120), as data transferring to the disk controller would be transferred via the bridge component.

It would have been obvious for one of ordinary skill in this art, at the time of invention was made to include Maleck's computer components into AAPA's computer system because not only are these computer components well known common devices that are utilized in the computer system, the combination would also have the benefit of providing a multi-level interrupt scheme for the computer system giving priority to time critical interrupt requests and able to incorporate into existing bus architecture (Maleck col. 1, l. 44 to col. 2, l. 46) to into obtain the invention as specified in claims 1, 9 and 14.

AAPA and Maleck do not teach the computer system and method for implementing a bypass method for efficient disk I/O (input output), comprising:

upon receiving a request for a disk I/O from ...;
subsequent to transferring the command causing the startup ...; and
the disk controller including a plurality of bypass registers

Wilcox teaches a system and method comprising:

upon receiving a request for a disk I/O from an application executing on the computer system, transferring a command to the disk controller, the command causing a start up of the disk drive coupled to the disk controller (Fig. 7, ref. 202; col. 3, ll. 40-62 and col. 5, ll. 7-41);

subsequent to transferring the command causing the startup and before the completion of said start up, preparing disk transaction information (Fig. 7 and col. 11, l. 38 to col. 12, l. 57), wherein the preparation of the disk transaction information would start before the completion of the start up, because the preparation of the data to be transferred (e.g. disk transaction information) (Fig. 7, ref. 204) commence subsequent to the assertion of the START signal; and

the disk controller including a plurality of bypass registers (Fig. 1, ref. 56) for receiving the disk transaction information (col. 11, l. 38 to col. 12, l. 57).

It would have been obvious for one of ordinary skill in this art, at the time of invention was made to include Wilcox's disk I/O operation into AAPA's computer system and method for the benefit of reducing latency in the transferring of data to the disk

drive (Wilcox, col. 2, ll. 19-23 and col. 2, ll. 51-53) to obtain the invention as specified in claims 1, 9 and 14.

8. As per claim 2, AAPA, Maleck and Wilcox teach all the limitation of claim 1 as discussed above, where AAPA further teaches the method for disk I/O in the computer system further comprising:

preparing the disk transaction information by using a processor of the computer system (AAPA, Specification, page 4, ll. 13-14); and

transferring the disk transaction information from the processor to the disk controller (AAPA, Specification, page 4, ll. 19-22).

9. As per claim 3, AAPA, Maleck and Wilcox all the limitation of claim 3 as discussed above, where AAPA and Maleck further teach the method for disk I/O in the computer system further comprising accessing a bus coupled to the disk controller to transfer the disk transaction information from the processor to the disk controller (AAPA, Specification, page 4, ll. 19-22 and Maleck, Fig. 1).

10. As per claim 4, AAPA, Maleck and Wilcox teach all the limitation of claim 3 as discussed above, where AAPA and Maleck further teach the method for disk I/O in the computer system further comprising accessing the bridge component (Maleck, Fig. 1, ref. 110, 120) controlling the bus coupled to the disk controller and transferring the disk

transaction information from the processor to the disk controller via the bridge component (AAPA, Specification, page 4, ll. 19-22 and Maleck, Fig. 1).

11. As per claim 5, AAPA, Maleck and Wilcox teach all the limitation of claim 4 as discussed above, where Maleck further teaches the method for disk I/O in the computer system further comprising wherein the bridge component is a South bridge (Maleck, Fig. 1, ref. 120) of the computer system.

12. As per claim 6, AAPA, Maleck and Wilcox teach all the limitation of claim 1 as discussed above, where Wilcox further teaches the method for disk I/O in the computer system further comprising wherein the transferring of the command to the disk controller causing the start up of the disk drive is configured to hide a start up latency of the disk drive (Wilcox, col. 2, ll. 19-23 and col. 2, ll. 51-53).

13. As per claim 7, AAPA, Maleck and Wilcox teach all the limitation of claim 1 as discussed above, where AAPA further teaches the method for disk I/O in the computer system further comprising wherein the disk transaction information includes a plurality of PRD (physical region descriptor) data structures and a plurality of CPB (command parameter block) data structures for implementing the disk transaction (AAPA, Specification, page 4, ll. 15-22).

14. As per claim 8, AAPA, Maleck and Wilcox teach all the limitation of claim 1 as discussed above, where AAPA further teaches the method for disk I/O in the computer system further comprising wherein the disk drive is compatible with a version of the ATA standard (AAPA, Specification, page 3, ll. 13-14).

15. As per claim 10, AAPA, Maleck and Wilcox teach all the limitation of claim 9 as discussed above, where Maleck further teaches the computer readable media further comprising wherein the bridge component is a South bridge (Maleck, Fig. 1, ref. 120) of the computer system.

16. As per claim 11, AAPA, Maleck and Wilcox teach all the limitation of claim 10 as discussed above, where AAPA and Maleck further teach the computer readable media further comprising:

accessing a North bridge (Maleck, Fig. 1, ref. 110) to transfer the disk transaction information (AAPA, Specification, page 4, ll. 19-22); and

transferring the disk transaction information from the processor to the disk controller via the North bridge (Maleck, Fig. 1, ref. 110) and the South bridge (Maleck, Fig. 1, ref. 120) of the computer system (AAPA, Specification, page 4, ll. 19-22).

17. As per claim 12, AAPA, Maleck and Wilcox teach all the limitation of claim 9 as discussed above, where Wilcox further teaches the computer readable media further comprising wherein the transferring of the command to the disk controller causing the

start up of the disk drive is configured to hide a start up latency of the disk drive (Wilcox, col. 2, ll. 19-23 and col. 2, ll. 51-53).

18. As per claim 13, AAPA, Maleck and Wilcox teach all the limitation of claim 9 as discussed above, where AAPA further teaches the computer readable media further comprising wherein the disk drive is compatible with a version of the ATA standard (AAPA, Specification, page 3, ll. 13-14; page 4, ll. 13-14).

19. As per claim 15, AAPA, Maleck and Wilcox teach all the limitation of claim 14 as discussed above, where AAPA further teaches the computer system further comprising:

preparing the disk transaction information by using a processor of the computer system (AAPA, Specification, page 4, ll. 13-14); and

transferring the disk transaction information from the processor to the disk controller (AAPA, Specification, page 4, ll. 19-22).

20. As per claim 16, AAPA, Maleck and Wilcox teach all the limitation of claim 14 as discussed above, where Maleck further teaches the computer readable media further comprising wherein the disk controller is integrated within bridge component (Maleck, Fig. 1, ref. 120), wherein it would have been obvious to integrate the disk controller into the south bridge.

21. As per claim 17, AAPA, Maleck and Wilcox teach all the limitation of claim 14 as discussed above, where Maleck further teaches the computer system further comprising wherein the bridge component is a South bridge (Maleck, Fig. 1, ref. 120) of the computer system.

22. As per claim 18, AAPA, Maleck and Wilcox teach all the limitation of claim 14 as discussed above, where Wilcox further teaches the computer system further comprising wherein the transferring of the command to the disk controller causing the start up of the disk drive is configured to hide a start up latency of the disk drive (Wilcox, col. 2, ll. 19-23 and col. 2, ll. 51-53).

23. As per claim 19, AAPA, Maleck and Wilcox teach all the limitation of claim 14 as discussed above, where AAPA further teaches the computer system further comprising wherein the disk transaction information includes a plurality of PRD (physical region descriptor) data structures and a plurality of CPB (command parameter block) data structures for implementing the disk transaction (AAPA, Specification, page 4, ll. 15-22).

24. As per claim 20, AAPA, Maleck and Wilcox teach all the limitation of claim 14 as discussed above, where AAPA further teaches the computer system further comprising wherein the disk drive is compatible with a version of the ATA standard (AAPA, Specification, page 3, ll. 13-14; page 4, ll. 13-14).

25. As per claim 21, AAPA, Maleck and Wilcox teach all the limitation of claim 20 as discussed above, where Wilcox further teaches the computer system further comprising wherein said plurality of bypass registers is operable to allow said disk controller to implement a disk transaction without writing to a register of said ATA standard (Wilcox, col. 11, ll. 38-62).

26. As per claim 22, AAPA, Maleck and Wilcox teach all the limitation of claim 1 as discussed above, where Wilcox further teaches the method further comprising aggregating said transaction information via a memory mapped data transfer from a processor (e.g. controller) of said computer system (Wilcox, Fig. 1, ref. 40, 42 and col. 3, l. 63 to col. 4, l. 3).

II. CLOSING COMMENTS

Conclusion

a. STATUS OF CLAIMS IN THE APPLICATION

The following is a summary of the treatment and status of all claims in the application as recommended by **M.P.E.P. 707.07(i)**:

a(1) CLAIMS REJECTED IN THE APPLICATION

Per the instant office action, claims 1-22 have received a first action on the merits and are subject of a first action non-final.

b. DIRECTION OF FUTURE CORRESPONDENCES

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671. The examiner can normally be reached on 8AM to 5PM.

IMPORTANT NOTE

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on (571) 272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2181

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

April 15, 2008

Chun-Kuan (Mike) Lee
Examiner
Art Unit 2181

/Alford W. Kindred/

Supervisory Patent Examiner, Art Unit 2163